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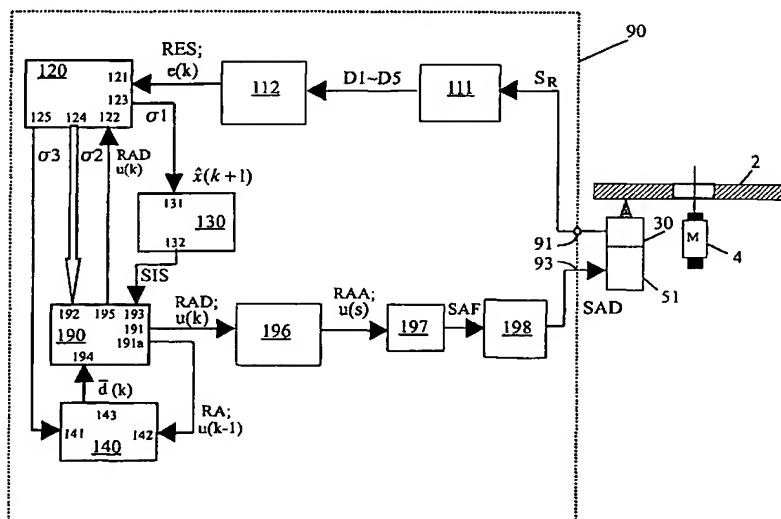
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c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).(74) Agent: **DEGUELLE, Wilhelmus, H., G.**; Philips Intellectual Property & Standards, Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.(84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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[Continued on next page]

(54) Title: **DISC DRIVE WITH IMPROVED RESISTANCE AGAINST MECHANICAL SHOCKS**

(57) **Abstract:** A disc drive apparatus (1) comprises; a) actuator means (50) for controlling the positioning of an element (34) of a scanning means; b) error signal calculating means (111, 112) for receiving a read signal (SR) and generating at least one error (RES; $e(k)$); c) a state estimator (120) for receiving said error and for outputting derived signals (s_1 , s_2 , s_3); d) shock detector means (130) for generating a shock indication signal (SIS); e) actuator control signal generator means (190) designed to perform sliding mode control (SMC), having at least one variable control parameter, for generating an actuator control signal (RAD; $u(k)$) on the basis of a second one (s_2) of said derived signals; f) the actuator control signal generator means setting a first value for said variable control parameter during normal operation, and setting a second value for said variable control parameter when said shock indication signal indicates the occurrence of a shock.

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A. CLASSIFICATION OF SUBJECT MATTER
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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 6 046 878 A (HAMPSHIRE RANDALL D ET AL) 4 April 2000 (2000-04-04) the whole document	1-8, 13 9-12
X A	EP 0 798 704 A (CIRRUS LOGIC INC) 1 October 1997 (1997-10-01) abstract	1-8, 13 9-12
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JIA-YUSH YEN, KURT HALLAMASEK, ROBERTO HOROWITZ: "Track-Following Controller Design for a Compound Disk Drive Actuator" JOURNAL OF DYNAMIC SYSTEMS, MEASUREMENT AND CONTROL, vol. 112, no. 3, September 1990 (1990-09), pages 391-402, XP008031105 USA the whole document	1-13
A	US 6 219 317 B1 (TSUTSUI KEIICHI) 17 April 2001 (2001-04-17) abstract	1-13

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IB 03/06022

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